

a constant pair of points, the electricity be passed from the machine in sparks, a certain proportion of gas is evolved; but if the sparks be rendered shorter, less gas is evolved; and if no sparks be passed, there is scarcely a sensible portion of gases set free. On substituting solution of sulphate of soda for water, scarcely a sensible quantity of gas could be procured even with powerful sparks, and nearly none with the mere current; yet the quantity of electricity in a given time was the same in all these cases.

66. I do not intend to deny that with such an apparatus common electricity can decompose water in a manner analogous to that of the voltaic pile; I believe at present that it can. But when what I consider the true effect only was obtained, the quantity of gas given off was so small that I could not ascertain whether it was, as it ought to be, oxygen at one wire and hydrogen at the other. Of the two streams one seemed more copious than the other, and on turning the apparatus round, still the same side in relation to the machine gave the largest stream. On substituting solution of sulphate of soda for pure water (65), these minute streams were still observed. But the quantities were so small, that on working the machine for half an hour I could not obtain at either pole a bubble of gas larger than a small grain of sand. If the conclusion which I have drawn (113) relating to the amount of chemical action be correct, this ought to be the case.

67. I have been the more
 anxious to assign the true
 value of
 this experiment as a test of
 electro-chemical action,
 because I
 shall have occasion to refer to
 it in cases of supposed
 chemical
 action by magneto-electric
 and other electric currents
 (72, 82)
 and elsewhere. But,
 independent of it, there
 cannot be now
 a doubt that Dr. Wollaston
 was right in his general
 conclusion;
 and that voltaic and common
 electricity have powers of
 chemical
 decomposition, alike in their
 nature, and governed by the
 same
 law of arrangement.
 68. iv. *Physiological effects*.
 —The power of the
 common
 electric current to shock and
 convulse the animal system,
 and
 when weak to affect the
 tongue and the eyes, maybe
 considered
 as the same with the similar
 power of voltaic electricity,
 account
 being taken of the intensity of
 the one electricity and
 duration
 of the other. When a wet
 thread was interposed in the
 course
 of the current of common
 electricity from the battery
 (27)
 charged by eight or ten ^x
 revolutions of the machine in
 good

¹ Or even from thirty to
 forty.